



**THE STATE OF NEVADA**  
**APPLICATION TO APPROPRIATE WATER**

Name of applicant: PAHRUMP VALLEY WATER RESOURCES, LLC  
Source: UNDERGROUND  
Basin: PAHRUMP VALLEY  
Manner of Use: MUNICIPAL  
Period of Use: January 1st to December 31st  
Priority Date: 07/05/2007

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**DENIAL OF STATE ENGINEER**

This application is hereby denied on the grounds that its approval would violate the provisions of State Engineer's Order No. 1107.

IN TESTIMONY WHEREOF, I, TRACY TAYLOR, P.E.,

State Engineer of Nevada, have hereunto set my hand and the seal of my office, this 1st day of August, A.D. 2007.

  
State Engineer

APPLICATION FOR PERMIT TO APPROPRIATE THE PUBLIC  
WATERS OF THE STATE OF NEVADA

THIS SPACE FOR OFFICE USE ONLY

Date of filing in State Engineer's Office JUL 05 2007

Returned to applicant for correction \_\_\_\_\_

Corrected application filed \_\_\_\_\_ Map filed \_\_\_\_\_

The applicant Pahrump Valley Water Resources, LLC

1240 E. State St. Suite 101 of Pahrump  
Street and No. Or P.O. Box No. City and Town

Nevada, 89048 hereby make \_\_\_\_\_ application for permission to appropriate  
State and Zip code No.  
the public waters of the State of Nevada, as hereinafter stated. (If applicant is a corporation, give date and place of  
incorporation; if a copartnership or association give names of members.) July 11, 2006, Nevada

Is applicant a U.S. citizen? ☒ Yes ☐ No

Is applicant 21 years of age or older? Yes ☒ No ☐

NRS 533.325 requires that applicant be a citizen of the United State or have legally declared their intention to  
become a citizen, and that they be 21 years of age or older.

1. The source of the proposed appropriation is Underground, Carbonate Rock Aquifer  
Name of stream, lake, spring, underground or other source

2. The amount of water applied for is 18,000 AFA, 36.0 cfs second feet.  
One second foot equals 448.83 gallons per minute.

(a) If stored in reservoir give number of acre-feet \_\_\_\_\_

3. The water to be used for Municipal  
Irrigation, power, mining, commercial, domestic or other use. Must limit to one major use.

4. If use is for:

(a) Irrigation, state number of acres to be irrigated \_\_\_\_\_

(b) Stockwater, state number and kind of animals \_\_\_\_\_

(c) Other use (describe fully "No. 12. Remarks") \_\_\_\_\_

(d) Power:

(1) Horse Power developed \_\_\_\_\_

(2) Point of return of water to stream \_\_\_\_\_

5. The water is to be diverted from its source at the following point Within the NE 1/4 of the SE 1/4 of Section 3,  
Describe as being within a 40-acre subdivision of public

Township 21S., Range 54E., M.D.B.&M., Nye County, Nevada, at a point from which the East 1/4 corner  
survey, and by course and distance to section corner; if on unsurveyed land, it should be so stated.  
of said Section 3 bears N09°46'33"E a distance of 1043.65 ft. Additional Points of Diversion will be identified  
as phased development and actual well production demands

6. Place of use Pahrump Regional Planning District. See Place of Use Map Already on File under Permit # 68791.  
Describe by legal subdivision. If on unsurveyed land, it should be so stated.

7. Use will begin about January 1<sup>st</sup> and end about December 31<sup>st</sup> of each year.  
Month and Day Month and Day

8. Description of proposed works (Under the provisions of NRS 535.010 you may be required to submit plans and specifications of your diversion or storage works.) Large diameter well with municipal-grade turbine pump and  
State manner in which water is to be diverted, i.e. diversion structure,  
motor, meter, possible storage tank, and distribution system as needed for municipal distribution. (continued)  
diversion and storage, drilled well with pump and meter, etc.

9. Estimated cost of works \$1,200,000 to \$2,000,000 per well

10. Estimated time required to construct works 3 years (first phase)  
If well completed, describe works.

11. Estimated time required to complete the application of water to beneficial use 5 years (first phase)

12. Remarks: For use other than irrigation or stock watering, state number and type of units to be served or annual consumptive use.

See attached exhibits

TELEPHONE NUMBER  
 Civilwise Services, LLC  
 (775) 751-1413

APPLICATION MUST BE SIGNED  
 BY THE APPLICANT OR AGENT

By

*David A. Richards*

Signature, applicant or agent

1240 E. State St. Suite 101

Street and No., or P.O. Box No.

Pahrump, NV 89048

City, State, Zip code No.

**\$250 FILING FEE MUST ACCOMPANY APPLICATION**

Item 8 (continued)

Description of Proposed Works

The well will be completed in a manner to minimize the risk of affecting the water level in the basin-fill aquifer. The basin-fill aquifer interval will be sealed, so there will be no water production from the upper aquifer. Additionally, the production interval in the completed well will be below the top of the Carbonate Rock Aquifer.

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STATE OF TEXAS  
OFFICE OF THE ATTORNEY GENERAL



# *CIVILWISE SERVICES LLC*

76027

1240 E. State St., Ste 101  
Pahrump, Nevada 89048

Phone: (775) 751-1413  
Fax: (775) 751-3584

July 2, 2007

State of Nevada  
Department of Conservation and Natural Resources  
Division of Water Resources  
901 S. Stewart St., 2<sup>nd</sup> Floor  
Carson City, NV 89701

Re: Application for a Permit to Appropriate Water from Underground by Pahrump Valley Water Resources, LLC in Nye County, Nevada.

The following is a list of Exhibits to accompany the Application for a Permit to Appropriate Water from Underground by Pahrump Valley Water Resources, LLC in Nye County, Nevada.

Exhibit A – Population and Water Use

Exhibit B – Regional Carbonate Rock Aquifer

Exhibit C – Available Ground Water Quantity

Exhibit D – Existing Wells within Section 3, Township 21S., Range 54E.

Exhibit E – Proposed Ground Water Development

Exhibit F – Advantages of Central Water Supply

Exhibit G – Statement of Financial Ability and Commitment

Exhibit H – References

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## Exhibit A

Population and Water Use

Southern Nevada is one of the fastest growing areas in the country, and Pahrump Valley has seen rapid population growth associated with this trend. Although current population estimates for Pahrump range from approximately 30,000 to 38,000 people, projections for future growth are staggering, with approximately 150,000 residents expected by the year 2050 (Nye County Water Resources Plan).

Since there are no perennial streams in the Pahrump Valley, the only source for water is underground. Currently, Pahrump Valley relies on the basin-fill aquifer for all known water production, and the rural history of the area (and resulting lack of infrastructure) has lead to the dominance of individual wells serving agricultural, business, and residential needs. According to the Division of Water Resources, there were 10,477 domestic wells in Pahrump Valley at the end of 2005 (PVT), and the Nye County Water Resources Plan estimates that 600 to 700 new wells are drilled each year. While there are several utility companies in Pahrump Valley, many areas still rely on individual wells. Additionally, in areas where these utility companies have extended service, but residents use existing wells, there is little incentive for them to abandon their wells in favor of the central supply.

Given the population projections for Pahrump Valley, it is estimated that as many as 20,000 new domestic water wells may be drilled in Pahrump Valley in the next 50 years (NCWRP), barring administrative action limiting or restricting the drilling of new domestic wells. Just how much water is withdrawn by these wells will vary according to individual use.

Water use in 2005 was estimated by the Division of Water Resources at 21,753 acre-feet/yr (PVT). Using the projected population of 150,000 in 2050, the Nye County Water Resources Plan projects the resulting water use will be approximately 80,000 acre-ft/yr in Pahrump Valley.

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## Exhibit B

### Regional Carbonate Rock Aquifer

The regional carbonate rock aquifer that underlies portions of Western Utah and Eastern Nevada has been studied widely as a part of the Nevada Carbonate Aquifers Study. This study has been a cooperative effort between the State of Nevada, Las Vegas Valley Water District, Desert Research Institute, City of North Las Vegas, and the U.S. Department of the Interior (U.S. Geological Survey and Bureau of Reclamation).

There has not been a great deal of study devoted to the location, extent, or characteristics of the Carbonate Rock Aquifer beneath Pahrump Valley, in conjunction with the above-referenced study. The Carbonate Rock Aquifer in Pahrump Valley has not been studied by direct geologic evidence, as there are no known exploratory wells into the geologic unit that comprises the Carbonate Rock Aquifer beneath Pahrump Valley.

The geology and hydrogeology of Pahrump Valley has been studied more often by the USGS as part of the larger Death Valley Regional Flow System. Although few reports specifically address the Carbonate Rock Aquifer as a feasible source for groundwater in Pahrump Valley, the geology of the Valley has been investigated, and some structural and hydrogeologic information from these reports can be used with respect to the Carbonate Rock Aquifer.

In a simplified model, Pahrump Valley is typical of the basin and range province; a valley bounded by mountains and filled with sediments from those surrounding mountain ranges. Generally, this basin-fill is modeled as lying directly on top of the carbonate rock unit, with some localized volcanics between the two units. Blakely and Others (1998) used extensive gravity data to model the thickness of the valley-fill in both the Amargosa Desert and Pahrump Valley. Their models were based on a two-unit scenario, with the valley-fill density increasing with depth. Further, their model puts the Carbonate Rock Aquifer unit directly beneath the basin-fill. Their modeling shows a very deep valley-fill basin in Pahrump Valley, with the thickness of the basin-fill thinning toward the margins of the valley, with the shallower parts of the basin toward the Spring Mountains.

With more detailed geologic investigation, Sweetkind and Others (2001) present a series of cross-sections that show a much more complex geologic model. The cross-sections show many separate fault blocks of varying relative displacement, caused by a series of normal and thrust faulting. Sweetkind and Others (2001) show that there are many places in Pahrump Valley where it is likely that thrust faulting has brought impermeable basement rocks over the Carbonate Rock Aquifer unit. However, east of the Wheeler Pass Thrust, (as shown by Potter and Others (2002)) it is probable that the Carbonate Rock Aquifer is directly underlying the basin-fill in Pahrump Valley.

It is the intention of Pahrump Valley Water Resources, LLC to produce water exclusively from the Carbonate Rock Aquifer in Pahrump Valley. The proposed point of diversion is located east of the Wheeler Pass Thrust toward the Spring Mountains, where it is likely that the Carbonate Rock Aquifer unit is not overlain by impermeable basement rocks.

## Exhibit C

### Available Ground Water Quantity

The annual ground water withdrawal from any aquifer should not exceed the average annual recharge, in order to avoid adverse affects of continual overdraft. Pahrump Valley has historically been in a state of ground water overdraft from the basin-fill aquifer. With the shift from predominantly irrigation water use to more residential water use, the actual water withdrawal from the basin-fill aquifer has declined from peak usage in the late 1960's.

The annual recharge rate used by the Division of Water Resources for Pahrump Valley is 19,000 AFA, which comes from USGS Water Supply Paper 2279 (Harrill, 1986). The 19,000 AFA figure presented by Harrill (1986) is the recharge rate for the basin-fill only. Harrill models the total recharge for Pahrump Valley at 37,000 AFA; 19,000 AFA to the basin-fill aquifer, and 18,000 AFA to the Carbonate Rock Aquifer. Given this, the annual yield used by the Division of Water Resources for Pahrump Valley is for the basin-fill aquifer only, and excludes the Carbonate Rock Aquifer from the Pahrump Valley ground water basin.

If the Carbonate Rock Aquifer is delineated separately from the basin-fill aquifer beneath Pahrump Valley (as is evidenced by the DWR annual yield figure), then the available unallocated ground water from this lower aquifer is equal to the total average annual recharge of 18,000 AFA. The Division of Water Resources has in the past permitted water rights specifically from the Carbonate Rock Aquifer in other basins in Nevada (permits 70429 and 70430, for example). It is the position of Pahrump Valley Water Resources, LLC that the Carbonate Rock Aquifer beneath Pahrump Valley is a separate aquifer, and hence a separate ground water basin than the basin-fill aquifer.



## Exhibit D

Existing Wells Within Section 3, Township 21S., Range 54E.

The proposed points of diversion for wells in the Carbonate Rock Aquifer are located in Section 3, Township 21 South, Range 54 East, M.D.B.&M., Nye County, Nevada. There are up to 9 wells with associated water rights in Section 3, and 7 domestic water wells in Section 3; all completed in the basin-fill aquifer. The following data shows the depth of each well from Well Driller's Logs, available on the Division of Water Resources website. Also, the approximate depth to the Carbonate Rock Aquifer is presented. The depth to carbonate values are from the model for the thickness of valley fill, based on gravity inversion data, and presented by Blakely and Others (1998).

**Wells Within  
Sec. 03, T. 21S., R. 54E.**

Q-Q	Log #	Date	Depth	CRA Depth	Notes:	WR Permit #	WR Owner
NW NW	84259	Aug-01	315	1230		65744	D&E Johnson Trust
SE NW	1093	Sep-49	730	1200		12547	Utilities, Inc.
	62096	Jan-62	330		domestic well?	46827	
NW NE	87569	Jan-03	380	1055		68801	Wulfenstein Trust R-501
					And 69222,	71008	
NE SW	62100	Jan-62	155	1215		19030	Mountain Falls, LLC
	62102	Jan-72	250		deepen	71392	(and Chi of Nevada)
SE NW	4508	Nov-40	720	1215		10571	Mountain Falls, LLC
	11018	Apr-70	445		replace	70652	(and Calvin Murton Bowman)
	11478	Feb-71	652		deepen		
SW NE	97752	Feb-41	737	1170		10599	Chi of Nevada
					Orig. well may not exist	19030	
NE SW	12038	Feb-41	730	1349		10572	?? - possibly withdrawn
SW SE	12039	? 1940	720	1357		10472	Hafen Family Ltd. Partnership
						24157	41167, 72042, 73083
NW SW	41539	Jun-93	140	1640	Domestic (originally)	66920	Triple Tech, LLC

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## Exhibit E

Proposed Ground Water Development

If the development of ground water from the Carbonate Rock Aquifer is undertaken in a gradual way, it is likely that any adverse affects on the basin-fill aquifer (from pumping from the Carbonate Rock Aquifer) could be easily reversed, if identified quickly. Pahrump Valley Water Resources, LLC proposes that a monitoring program be put in place in conjunction with the development of water from the Carbonate Rock Aquifer. A network of existing water wells in the basin-fill in Pahrump Valley could be selected, and the water levels monitored on a regular basis, so that any drawdown trends (directly related to water withdrawal from the Carbonate Rock Aquifer) could be identified quickly.

In addition to private wells, the community of Pahrump is currently served by three different utility companies; Utilities, Inc. of Central Nevada, Pahrump Utility Company, and Desert Utilities. Pahrump Valley Water Resources, LLC does not intend to create an additional utility company, but would instead work with the existing utility companies, to facilitate the growth and extension of those systems to serve the residents of Pahrump. By applying for the full Carbonate Rock Aquifer recharge amount, Pahrump Valley Water Resources, LLC would manage the withdrawal of water from the lower aquifer as a single entity, which would simplify regulation and permitting. The existing utilities, as well as the community of Pahrump and the State of Nevada would benefit from having a single entity responsible for managing the production of water from the Carbonate Rock Aquifer in Pahrump Valley.

By working in conjunction with the existing utility companies in Pahrump, there would be parallel growth of population and water production. This parallel growth should prevent serious complications, should water production from the carbonate rock aquifer have to cease. Water development could be accomplished such that if water resources were abruptly restricted from the Carbonate Rock Aquifer, the existing utilities would be able to serve the slightly increased need, and no households or businesses would be entirely dependent on the water produced from the Carbonate Rock Aquifer.

Although a single application is currently being filed with the Division of Water Resources, Pahrump Valley Water Resources, LLC realizes that a single well (point of diversion) will not be capable of producing the large amount of ground water being applied for. Additional Points of Diversion will be identified, as necessary, with phased ground water development.

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Domestic Wells:

NE SW	26905	Mar-85	274
NE SW	62094	Sep-80	342
NW SW	62095	Mar-80	160
SW SE	62097	Jul-81	300
SW SE	62099	Jan-74	300
SW SE	62106	Nov-80	297
SE SE	62130	Aug-73	300

The well that is completed closest to the projected depth of the Carbonate Rock Aquifer is still over 430 feet above the top of the carbonate rock unit, and shows no indication of carbonate rocks on the Well Driller's Log. In Section 3, the difference between the existing well depth and projected Carbonate Rock Aquifer depth ranges from between 433 feet to 1500 feet. This vertical distance is great enough to indicate that the existing wells are in a different hydrologic unit than the Carbonate Rock Aquifer.

Given the geologic data presented by Sweetkind and Others (2001), it is very possible that the bulk of the basin-fill aquifer is isolated from the Carbonate Rock Aquifer near the proposed Points of Diversion, due to thrust faulting, and the Wheeler Pass Thrust in particular. This may play an important role in the hydraulic connectivity of the basin-fill and Carbonate Rock Aquifers in Pahrump Valley.



## Exhibit H

References

Blakely, R.J., Morin, R.L., McKee, E.H., Schmidt, K.M., Langenheim, V.E., and Dixon, G.L., 1998, Three-dimensional model of Paleozoic basement beneath Amargosa Desert and Pahrump Valley, California and Nevada: Implications for tectonic evolution and water resources: U.S. Geological Survey Open-File Report 98-496, 28 p.

Buqo, Thomas S., 2004, Nye County Water Resources Plan, Department of Natural Resources and Federal Facilities, Nye County, 120 p.

Harrill, James R., 1986, Ground Water Storage Depletion in Pahrump Valley, Nevada-California, 1962-75: U.S. Geological Survey Water-Supply Paper 2279, 53 p.

Sweetkind, Donald S., Dickerson, Robert P., Blakely, Richard J., and Denning, Paul D., 2001, Interpretive Geologic Cross Sections for the Death Valley Regional Flow System and Surrounding Areas, Nevada and California: U.S. Geologic Survey Miscellaneous Field Studies Map MF-2370 (map with accompanying pamphlet).

"Deeper Wells May Be Needed", Pahrump Valley Times (PVT), July 5, 2006

Potter, C.J., Sweetkind, D.S., Dickerson, R.P., Killgore, M.L., 2002, Hydrostructural Maps of the Death Valley Regional Flow System, Nevada and California, U.S. Geological Survey Miscellaneous Field Studies Map MF-2370

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